

AMENDED SHEET

WHAT IS CLAIMED IS:
~~Patent Claims~~

1. Process for producing a thermal barrier coating for components of internal-combustion engines which are exposed to hot gases, the thermal barrier coating having a columnar structure, characterized in that acetylacetonates of zirconium and at least one stabilising element selected from the group consisting of the alkaline earth metals or rare earths are provided as starting substances, the starting substances are vapourised by being heated to at most 250°C so as to form the coating gases, the coating gases are transported, in an admission system which has been heated to at most 250°C, to the component (4) to be coated, the surface of which is heated at a deposition temperature of between 300°C and 1100°C, where the gases are broken down, at a process pressure of from 0.5 to 50 mbar, so that a thermal barrier coating (1) with a layer thickness of between 25 μm and 1000 μm is deposited.

2. Process according to Claim 1, characterized in that the surface of the component (4) to be coated is heated at a deposition temperature of between 800°C and 1100°C.

3. Process according to Claim 1 or 2, characterized in that yttrium, lanthanum, calcium, magnesium or cerium is provided as the stabilising element selected from the group consisting of the alkaline earth metals or rare earths.

4. Process according to Claim 1 or 3, characterized in that the coating gases are mixed with a carrier gas.

5. Process according to one or more of the preceding claims, characterized in that oxygen or a mixture of oxygen and argon is provided as the carrier gas.

6. Process according to one or more of the preceding claims, characterized in that the coating gases or the coating gases

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and the carrier gas are transported to the component (9) to be coated in the admission system,

7. Process according to one or more of the preceding claims, characterized in that the starting substances are provided in powder form.

8. Process according to one or more of the preceding claims, characterized in that zirconia partially stabilized with 7 to 9% by weight of yttria is deposited.

9. Process according to one or more of the preceding claims, characterized in that the thermal barrier coating (1) is deposited on the component (9) to be coated in a layer thickness of between 75 and 250 μm .